In the parent application, claims 10 to 20 were rejected based on Uchida et al., U.S. Patent No. 4,881,268. Uchida teaches the use of a complex arrangement of fiber optics for transmitting light which is reflected from a banknote in a banknote validator. Applicants wish to point out that in Uchida's apparatus, incident and reflected light are physically separated in Uchida's apparatus, and he requires cumbersome support blocks (3, 112). For example, as shown in Fig. 1 of Uchida, incident light is directed along a cable 5, while the reflected light is captured and transmitted by a fiber optic bundle 6. Figure 4 illustrates a complex single cable 12 through which light is delivered, filtered and received, but within the cable 12 there are physical means for separating the incident and reflected light (see the incident light cable 4a and fiber optic cables 4b).

In contrast, the banknote validator of the present invention utilizes a light guide which is both incident on **and** reflected from a banknote which is being validated. In a preferred embodiment, the light guide is a trapezoidal-shaped planar solid. This arrangement advantageously enables the number of components to be reduced and the cost of the apparatus to be minimized. Applicants' claims have been amended to clarify the structure and function of the light guide, which clearly distinguishes over the teachings of Uchida.

Entry of this preliminary amendment and examination on the merits is respectfully requested.

Respectfully submitted,

KILLWORTH, GOTTMAN, HAGAN
& SCHAEFF, L.L.P.

By Susan M. Luna
Susan M. Luna
Registration No. 38,769

One Dayton Centre
One South Main Street, Suite 500
Dayton, Ohio 45402-2023
Telephone: (937) 223-2050
Facsimile: (937) 223-0724

SML/

APPENDIX
VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE ABSTRACT

Page 27, lines 17-21:

The optical sensor (305,306) comprises a [trapezial] trapezoidal light guide ([33] 34, 104), a broadband light source (350) for illuminating a banknote via the light guide ([33] 34, 104) and sensors (351, 352, 353) for detecting light reflected from the banknote via the light guide ([33] 34, 104). Filters (354, 355, 356) are arranged in front of the sensors (351, 352, 353). The light guide ([33] 34,104) is inclined relative to the banknote path (6).

IN THE SPECIFICATION

Page 10, lines 4-7:

The lower section 16 houses a pcb 33 that extends fully across the rear of the lower moulding 17, a first generally [trapezial] trapezoidal light guide 34 and a banknote drive mechanism. The light guide 34 is mounted at its narrow end to the pcb 33 and extends vertically so that its broad end is received in the transverse slot 25.

Page 13, lines 28-31:

A horizontal pcb 103 extends across the top of the lower moulding 60 of the upper section 15. A second [trapezial] trapezoidal light guide 104 is mounted at its narrow end to the horizontal pcb 103 and extends vertically downward so that its broad end is located in the transverse slot 95 in the lower wall 60a of the lower moulding 60.

Page 14, lines 11-16:

Referring to Figure 10, the broad ends of the light guides [33] 34, 104 make angles of 70° and 110° respectively to the front and rear faces of the light guides [33] 34, 104. Consequently, light guided by the light guides [33] 34, 104 is not perpendicularly incident on a banknote 109 in the banknote path 6. The narrow ends 111 of the light guides [33] 34, 104 have semi-circular cut-outs 112 which serve to spread light being shone therein.

Page 16, lines 1-8:

The narrow end of the first trapezoidal light guide [33] 34 is received in the other half of the carrier 356. Light from the LED 350 is guided by the light guide [33] 34 to the banknote path 6 and light reflected by a banknote in the banknote path 6 is guided by the light guide [33] 34 to the first, second and third filters 354, 355, 356. The reflected light passing through the first filter 354 only is incident on the first phototransistor 351. The reflected light passing through the first filter 354 and the second filter 355 is incident on the second phototransistor 352. The reflected light passing through the third filter 354 only is incident on the third phototransistor 353.

Page 19, lines 26-31:

The microcontroller 300 also continuously monitors the output of the first optical sensor 305 until a change in one or both outputs indicates that the leading edge of the banknote has reached the first light guide [33] 34. From this point on, the microprocessor 300 repeatedly samples and stores in the RAM 302 the outputs of the optical sensors 305, 306 and the magnetic sensor 307. The sampling terminates when one or both of the outputs of the second optical sensor 306 indicate that the banknote has

Page 20, lines 5-8:

The samples S1, S2, and S3 of the outputs of respectively the first, second and third phototransistors 351, 352, 353 of the optical sensors 305, 306 are processed according to [the following] stored algorithms to produce the values to be [compated] compared with stored reference values[:- ?].

IN THE CLAIMS

10.(Amended)A banknote validator including an optical sensor for sensing optical characteristics of a banknote being validated, the optical sensor comprising a light source, [incident light-directing means for directing light from the light source onto a banknote being validated,] a light guide, and a photodetector which is preceded by an optical filter [and reflected light-directing means for directing light from the light source, after reflection from a banknote being validated, to the photodetector, characterized in that] wherein the light source is a source of broadband light and [an optical filter is interposed between reflected light-directing means and the photodetector] the light guide is arranged to operate as both an incident light-directing means for directing light from the light source onto the banknote and as a reflected light-directing means for directing light reflected from the banknote to the photodetector via the optical filter.

12.(Amended) A banknote validator according to claim [11] 10, wherein the light guide is substantially in the form of a trapezoid, the narrow end of which is adjacent to the light source and the photodetector and the broad end of which is adjacent a banknote path.

14.(Amended) A banknote validator according to [any one of claims 11 to 13] claim 10, wherein the optical sensor comprises a plurality of photodetectors and a plurality of optical filters to which light is directed by the [reflected light-directing means] light guide, the optical filters having different passbands and being associated with respective photodetectors.

16.(Amended) A banknote validator including an optical banknote sensor configured to sense light reflected by a banknote being validated, [characterized in that] wherein the sensor is configured to sense light reflected obliquely from [a] the banknote being validated.

17.(Amended) A banknote validator according to claim 16, wherein the sensor is configured to sense light reflected from [a] the banknote being validated at an angle in the range 60° to 80° to the surface of the banknote at the point of reflection.

19.(Amended) A banknote validator according to claim 16, [17, or 18,] wherein the optical banknote sensor comprises a light guide for guiding light from [a] the banknote being validated to a photodetector.

20.(Amended) A banknote validator according to claim 19, wherein the light guide comprises a transparent, [trapezial] trapezoidal, planar solid having a narrow end and a broad end, the narrow end being adjacent the photodetector and the broad end being adjacent a banknote path.